

What is Claimed is:

1. An expression system comprising:  
a first nucleic acid sequence that encodes a Toll-like receptor operably linked to  
5 a first expression control sequence; and  
a second nucleic acid sequence that encodes a reporter that (a) generates a  
detectable signal when the reporter is expressed and the cell is exposed to conditions  
effective for generating the detectable signal, and (b) is operably linked to a second  
expression control sequence that comprises a cytokine promoter, a chemokine  
10 promoter, a co-stimulatory marker promoter, or a defensin promoter.
2. The expression system of claim 1 wherein the second expression control  
sequence comprises an IFN- $\alpha$  promoter.
- 15 3. The expression system of claim 1 wherein the first nucleic acid sequence  
comprises the nucleotide sequence of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:5,  
SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:15, SEQ  
ID NO:17, SEQ ID NO:19, or a degenerate variant of any of the foregoing.
- 20 4. The expression system of claim 1 wherein the first nucleic acid sequence  
comprises a nucleotide sequence that encodes a polypeptide having the sequence of  
SEQ ID NO:2, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:10, SEQ ID  
NO:12, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:18, SEQ ID NO:20, or any one of  
the foregoing sequences with one or more conservative amino acid substitutions.
- 25 5. The expression system of claim 1 wherein the detectable signal comprises  
luciferase activity or  $\beta$ -galactosidase activity.
6. The expression system of claim 1 wherein a first vector comprises the first  
30 nucleic acid sequence and a second vector comprises the second nucleic acid sequence.
7. A vector comprising the expression system of claim 1.

8. A TLR agonist identified using the expression system of claim 1.
9. A pharmaceutical composition comprising the TLR agonist of claim 8, or a pharmaceutically acceptable salt thereof.
- 5 10. A cultured cell comprising the expression system of claim 1.
11. The cultured cell of claim 10 wherein the cell is a mammalian cell or a descendent of a mammalian cell.
- 10 12. The culture cell of claim 11 wherein the cell is a human cell or a descendent of a human cell.
13. The cultured cell of claim 10 further comprising an expressible nucleic acid sequence that encodes IFN- $\alpha$  operably linked to a third expression control sequence.
- 15 14. The cultured cell of claim 13 wherein the expressible nucleic acid sequence that encodes IFN- $\alpha$  is located on a chromosome of the cultured cell.
- 15 15. The cultured cell of claim 14 wherein the cultured cell is a Namalwa cell.
16. The cultured cell of claim 13 wherein the expressible nucleic acid sequence that encodes IFN- $\alpha$  is located on an extrachromosomal vector.
- 20 17. A TLR agonist identified using the cultured cell of claim 10.
- 25 18. A pharmaceutical composition comprising the TLR agonist of claim 17, or a pharmaceutically acceptable salt thereof.